

The Use of Membrane Technology in Bulk Chemicals Manufacturing - The Past, Present and Future

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In this tandem presentation, the past, present and future of the importance of membrane technology for the Shell group will be discussed in a broad perspective.

The developments within Shell will be linked to the Dutch initiative of the preparation of a Roadmap Separation Technology. This roadmap has been initiated by the Dutch Ministry of Economic Affairs and has been prepared with the help of a large number of Dutch Companies, Knowledge Institutes and Universities.

The exercise is bound to give direction to the research on Separation technology in the Netherlands with a focus on piloting and demonstration projects.

For six different sectors, namely Oil/gas, bulk chemicals, process water, food, pharma and specialty chemicals separate maps have been made based on various drivers. In the sector Bulk Chemicals also separate technology maps have been made, membrane technology being one of them. This membrane technology roadmap will be discussed in detail during the presentation.

As an example of a successful development in membrane technology for the (petro)chemical industry, PDMS (polydimethylsiloxane) membranes will be discussed.

After initial work performed at the Shell Laboratories in Amsterdam, the development was taken over by GKSS, where the membranes were developed further. Currently, these membranes are widely used in vapour recovery Systems, with a second wave of applications coming up in non-aqueous nanofiltration.

Where the Shell contribution of this tandem-presentation will tackle the industrial applications, the GKSS contribution will more focus on the research and new developments in the field of silicone based membranes. Various chemical and physical modifications of silicone rubber will be discussed, which lead to significant improvement of membrane performance in vapour Separation and pervaporation.